

SEQUENCE LISTING



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<120> COMPOSITIONS AND METHODS FOR WT1
 SPECIFIC IMMUNOTHERAPY

<130> 210121.465C4

<140> US 09/785,019

<141> 2001-02-15

<150> 09/685,830

<151> 2000-10-09

<150> 09/684,361

<151> 2000-10-06

<150> 09/276,484

<151> 1999-03-25

<150> 09/164,223

<151> 1998-09-30

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 <212> PRT
 <213> Mus musculus

<400> 306
 Tyr Phe Lys Leu Ser His Leu Gln Met
 1 5

<210> 307
 <211> 9
 <212> PRT
 <213> Mus musculus

<400> 307
 Tyr Gln Met Thr Ser Gln Leu Glu Cys
 1 5

<210> 308
 <211> 9
 <212> PRT
 <213> Mus musculus

<400> 308
 Tyr Ser Ser Asp Asn Leu Tyr Gln Met
 1 5

<210> 309
 <211> 6
 <212> PRT
 <213> Homo sapien

<400> 309
 Gly Ala Ala Gln Trp Ala
 1 5

<210> 310
 <211> 12
 <212> PRT
 <213> Homo sapien

<400> 310
 Ala Ser Ala Tyr Gly Ser Leu Gly Gly Pro Ala Pro
 1 5 10

<210> 311
 <211> 15
 <212> PRT
 <213> Homo sapien

<400> 311
 Ala Phe Thr Val His Phe Ser Gly Gln Phe Thr Gly Thr Ala Gly
 1 5 10 15

<210> 312
 <211> 5
 <212> PRT
 <213> Homo sapien

<400> 312
 His Ala Ala Gln Phe
 1 5

<210> 313
 <211> 32
 <212> PRT
 <213> Homo sapien

<400> 313
 Cys His Thr Pro Thr Asp Ser Cys Thr Gly Ser Gln Ala Leu Leu Leu
 1 5 10 15
 Arg Thr Pro Tyr Ser Ser Asp Asn Leu Tyr Gln Met Thr Ser Gln Leu
 20 25 30

<210> 314
 <211> 32
 <212> PRT
 <213> Homo sapien

<400> 314
 Arg Ile His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg
 1 5 10 15
 Val Pro Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser
 20 25 30

<210> 315
 <211> 4
 <212> PRT
 <213> Homo sapien

<400> 315
 Arg Tyr Phe Lys
 1

<210> 316
 <211> 14
 <212> PRT
 <213> Homo sapien

<400> 316
 Glu Arg Arg Phe Ser Arg Ser Asp Gln Leu Lys Arg His Gln
 1 5 10

<210> 317
 <211> 22
 <212> PRT
 <213> Homo sapien

<400> 317
 Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr His Thr Arg Thr
 1 5 10 15
 His Thr Gly Lys Thr Ser
 20

<210> 318
 <211> 21
 <212> PRT
 <213> Homo sapien

<400> 318
 Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val Arg His His Asn
 1 5 10 15
 Met His Gln Arg Asn
 20

<210> 319
 <211> 449
 <212> PRT
 <213> Homo sapien

<400> 319
 Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro
 1 5 10 15
 Ser Leu Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala
 20 25 30
 Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr
 35 40 45
 Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro
 50 55 60
 Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly
 65 70 75 80
 Ala Glu Pro His Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe
 85 90 95
 Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe
 100 105 110
 Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe
 115 120 125
 Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile

130		135		140
Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr				
145		150		155
Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe				
	165		170	175
Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln				
	180		185	190
Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser				
	195		200	205
Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp				
	210		215	220
Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln				
	225		230	235
Met Asn Leu Gly Ala Thr Leu Lys Gly Val Ala Ala Gly Ser Ser Ser				
	245		250	255
Ser Val Lys Trp Thr Glu Gly Gln Ser Asn His Ser Thr Gly Tyr Glu				
	260		265	270
Ser Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile				
	275		280	285
His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val Pro				
	290		295	300
Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys				
	305		310	315
Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys				
	325		330	335
Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro				
	340		345	350
Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Ser Arg Ser Asp				
	355		360	365
Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln				
	370		375	380
Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr				
	385		390	395
His Thr Arg Thr His Thr Gly Lys Thr Ser Glu Lys Pro Phe Ser Cys				
	405		410	415
Arg Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val				
	420		425	430
Arg His His Asn Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala				
	435		440	445
Leu				

<210> 320

<211> 449

<212> PRT

<213> Mus musculus

<400> 320

Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Ser		
1	5	10
Ser Leu Gly Gly Gly Gly Gly Cys Gly Leu Pro Val Ser Gly Ala Ala		
	20	25
Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr		
	35	40
		45

Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro
 50 55 60
 Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly
 65 70 75 80
 Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Leu His Phe
 85 90 95
 Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe
 100 105 110
 Gly Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe
 115 120 125
 Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Thr Ile
 130 135 140
 Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Ala Pro Ser Tyr
 145 150 155 160
 Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe
 165 170 175
 Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln
 180 185 190
 Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser
 195 200 205
 Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp
 210 215 220
 Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln
 225 230 235 240
 Met Asn Leu Gly Ala Thr Leu Lys Gly Met Ala Ala Gly Ser Ser Ser
 245 250 255
 Ser Val Lys Trp Thr Glu Gly Gln Ser Asn His Gly Ile Gly Tyr Glu
 260 265 270
 Ser Asp Asn His Thr Ala Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile
 275 280 285
 His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val Ser
 290 295 300
 Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys
 305 310 315 320
 Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys
 325 330 335
 Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro
 340 345 350
 Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Ser Arg Ser Asp
 355 360 365
 Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln
 370 375 380
 Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr
 385 390 395 400
 His Thr Arg Thr His Thr Gly Lys Thr Ser Glu Lys Pro Phe Ser Cys
 405 410 415
 Arg Trp His Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val
 420 425 430
 Arg His His Asn Met His Gln Arg Asn Met Thr Lys Leu His Val Ala
 435 440 445
 Leu

<211> 9
 <212> PRT
 <213> Homo sapien and Mus musculus

<400> 321
 Pro Ser Gln Ala Ser Ser Gly Gln Ala
 1 5

<210> 322
 <211> 9
 <212> PRT
 <213> Homo sapien and Mus musculus

<400> 322
 Ser Ser Gly Gln Ala Arg Met Phe Pro
 1 5

<210> 323
 <211> 9
 <212> PRT
 <213> Homo sapien and Mus musculus

<400> 323
 Gln Ala Arg Met Phe Pro Asn Ala Pro
 1 5

<210> 324
 <211> 9
 <212> PRT
 <213> Homo sapien and Mus musculus

<400> 324
 Met Phe Pro Asn Ala Pro Tyr Leu Pro
 1 5

<210> 325
 <211> 9
 <212> PRT
 <213> Homo sapien and Mus musculus

<400> 325
 Pro Asn Ala Pro Tyr Leu Pro Ser Cys
 1 5

<210> 326
 <211> 9
 <212> PRT
 <213> Homo sapien and Mus musculus

<400> 326
 Ala Pro Tyr Leu Pro Ser Cys Leu Glu
 1 5

<210> 327
 <211> 1029
 <212> DNA
 <213> Homo sapiens

<400> 327
 atgcagcatc accaccatca ccacatgagc gataaaatta ttcacctgac tgacgacagt 60
 tttgacacgg atgtactcaa agcggacggg gcgatcctcg tcgatttctg ggcagagtgg 120
 tgcggtccgt gcaaaatgat cgccccgatt ctggatgaaa tcgctgacga atatcagggc 180
 aaactgaccg ttgcaaaact gaacatcgat caaaaccctg gcactgcgcc gaaatatggc 240
 atccgtggta tcccgactct gctgctgttc aaaaacgggtg aagtggcggc aaccaaagtg 300
 ggtgcactgt ctaaagggtca gttgaaagag ttctctgacg ctaacctggc cggttctggt 360
 tctggccata tgcagcatca ccaccatcac cacgtgtcta tcgaaggtcg tgctagctct 420
 ggtggcagcg gtctggttcc gcgtggtagc tctggttcgg gggacgacga cgacaaatct 480
 agtaggcaca gcacagggtg cgagagcgat aaccacacaa cgcccatcct ctgcggagcc 540
 caatacagaa tacacacgca cgggtgtcttc agaggcattc aggatgtgcy acgtgtgcct 600
 ggagtagccc cgactcttgt acggtcggca tctgagacca gtgagaaacg ccccttcatg 660
 tgtgcttacc caggctgcaa taagagatat tttaagctgt cccacttaca gatgcacagc 720
 aggaagcaca ctggtgagaa accataccag tgtgacttca aggactgtga acgaagggtt 780
 tttcgttcag accagctcaa aagacaccaa aggagacata cagggtgtgaa accattccag 840
 tgtaaaactt gtcagcgaag gttctcccg tccgaccacc tgaagacca caccaggact 900
 catacaggtg aaaagccctt cagctgtcgg tggccaagtt gtcagaaaaa gtttgcccg 960
 tcagatgaat tagtccgcca tcacaacatg catcagagaa acatgacca actccagctg 1020
 gcgctttga 1029

<210> 328
 <211> 1233
 <212> DNA
 <213> Homo sapiens

<400> 328
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 tttgacacgg atgtactcaa agcggacggg gcgatcctcg tcgatttctg ggcagagtgg 120
 tgcggtccgt gcaaaatgat cgccccgatt ctggatgaaa tcgctgacga atatcagggc 180
 aaactgaccg ttgcaaaact gaacatcgat caaaaccctg gcactgcgcc gaaatatggc 240
 atccgtggta tcccgactct gctgctgttc aaaaacgggtg aagtggcggc aaccaaagtg 300
 ggtgcactgt ctaaagggtca gttgaaagag ttctctgacg ctaacctggc cggttctggt 360
 tctggccata tgcagcatca ccaccatcac cacgtgtcta tcgaaggtcg tgctagctct 420
 ggtggcagcg gtctggttcc gcgtggtagc tctggttcgg gggacgacga cgacaaatct 480
 agtaggggct ccgacgttcg tgacctgaac gcactgctgc cggcagttcc gtccctgggt 540
 ggtggtggtg gttgcgcact gccggttagc ggtgcagcac agtgggctcc gggttctggac 600
 ttgcgaccgc cgggtgcatc cgcatacggg tccctgggtg gtccggcacc gccgcccggc 660
 ccgcccgcgc cgcgcggccg gccgcgcac tccttcatca aacaggaacc gagctgggg 720
 ggtgcagaac cgcacgaaga acagtgcctg agcgcattca ccgttcaact ctccggccag 780
 ttactggca cagccggagc ctgtcgttac gggcccttcg gtccctcctc gccagccag 840
 gcgtcatccg gccagggcag gatgtttcct aacgcgccct acctgccag ctgcctcgag 900
 agccagcccg ctattcgcaa tcagggttac agcacggtca ccttcgacgg gacgcccagc 960
 tacggtcaca cgccctcgca ccatgcggcg cagtccccca accactcatt caagcatgag 1020
 gatcccatgg gccagcagg ctgcgtgggt gacgagcagt actcgggtgcc gccccgggc 1080
 tatggctgcc acaccccccac cgacagctgc accggcagcc aggctttgct gctgaggacg 1140
 ccctacagca gtgacaattt ataccaaatg acatcccagc ttgaatgcat gacctggaat 1200
 cagatgaact taggagccac cttaaagggc tga 1233

<210> 329

<211> 1776

<212> DNA

<213> Homo sapiens

<400> 329

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atgcagcatc accaccatca ccacatgagc gataaaatta ttcacctgac tgacgacagt 60
tttgacacgg atgtactcaa agcggacggg gcgatcctcg tcgatttctg ggcagagtgg 120
tgcggtccgt gcaaaatgat cgccccgatt ctggatgaaa tcgctgacga atatcagggc 180
aaactgaccg ttgcaaaact gaacatcgat caaaaccctg gcactgcgcc gaaatatggc 240
atccgtggta tcccgactct gctgctgttc aaaaacgggtg aagtggcggc aaccaaagtg 300
ggtgcactgt ctaaaggcca gttgaaagag ttctcgcacg ctaacctggc cggttctggt 360
tctggccata tgcagcatca ccaccatcac cacgtgtcta tcgaaggtcg tgctagctct 420
ggtggcagcg gtctggttcc gcgtggtagc tctggttcgg gggacgacga cgacaaatct 480
agtaggatgg gctccgacgt tcgtgacctg aacgcactgc tgccggcagt tccgtccctg 540
ggtggtggtg gtggttgcgc actgccggtt agcgtgacg cacagtgggc tccggttctg 600
gaattcgcac cgccgggtgc atccgcatac ggttccctgg gtggtccggc accgccgccg 660
gcaccgccgc cgccgccgcc gccgccgccg cactccttca tcaaacagga accgagctgg 720
ggtggtgcag aaccgcacga agaacagtgc ctgagcgcat tcaccgttca cttctccggc 780
cagttcactg gcacagccgg agcctgtcgc tacgggccct tcggtcctcc tccgccacgc 840
caggcgatcat ccggccaggc caggatgttt cctaacgcgc cctacctgcc cagctgcctc 900
gagagccagc ccgctattcg caatcagggt tacagcacgg tcaccttcga cgggacgccc 960
agctacggtc acacgccctc gcaccatgcg gcgcagttcc ccaaccactc attcaagcat 1020
gaggatccca tgggccagca gggctcgctg ggtgagcagc agtactcggg gccgcccccg 1080
gtctatggct gccacacccc caccgacagc tgcaccggca gccaggcttt gctgctgagg 1140
acgccctaca gcagtgacaa tttataccaa atgacatccc agcttgaatg catgacctgg 1200
aatcagatga acttaggagc caccttaaag ggccacagca cagggtacga gagcgataac 1260
cacacaacgc ccactctctg cggagcccaa tacagaatac acacgcacgg tgtcttcaga 1320
ggcattcagg atgtgcgacg tgtgcttgga gtacccccga ctcttgtagc gtcggcatct 1380
gagaccagtg agaaacgccc cttcatgtgt gcttaccagc gctgcaataa gagatatatt 1440
aagctgtccc acttacagat gcacagcagg aagcacactg gtgagaaacc ataccagtgt 1500
gacttcaagg actgtgaacg aaggtttttt cgttcagacc agctcaaaag acaccaaaag 1560
agacatacag gtgtgaaacc attccagtgt aaaacttgtc agcgaaagtt ctcccggtcc 1620
gaccacctga agaccacac caggactcat acaggtgaaa agcccttcag ctgtcggtgg 1680
ccaagttgtc agaaaaagtt tgcccgggtc gatgaattag tccgccatca caacatgcat 1740
cagagaaaca tgaccaaact ccagctggcg ctttga 1776

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<210> 330

<211> 771

<212> DNA

<213> Homo sapiens

<400> 330

```

atgcagcatc accaccatca ccacggctcc gacgttcgtg acctgaacgc actgctgccg 60
gcagttccgt cctgggtggg tgggtggtgt tgcgcactgc cggttagcgg tgcagcacag 120
tgggtccggg ttctggactt cgcaccgccg ggtgcacccg catacggttc cctgggtggg 180
ccggcaccgc cgccggcacc gccgccgccg ccgccgccgc cgccgcactc cttcatcaaa 240
caggaaaccg gctggggtgg tgcagaaccg cacgaagaac agtgccctgag cgcattcacc 300
gttcacttct ccggccaagt cactggcaca gccggagcct gtcgctacgg gcccttcggg 360
cctcctccgc ccagccaggc gtcacccggc caggccagga tgtttcctaa cgccgccctac 420
ctgccagct gcctcgagag ccagcccgtc attcgcaatc agggttacag cacggtcacc 480
ttcgacggga cgcccagcta cggtcacacg ccctcgacac atgcggcgca gttccccaac 540
cactcattca agcatgagga tcccatgggc cagcagggtc cgctgggtga gcagcagtac 600
tcggtgccgc ccccggtcta tggctgccac acccccaccg acagctgcac cggcagccag 660
gctttgctgc tgaggacgcc ctacagcagt gacaatttat accaaatgac atcccagctt 720

```

gaatgcatga cctggaatca gatgaactta ggagccacct taaagggctg a

771

<210> 331

<211> 567

<212> DNA

<213> Homo sapiens

<400> 331

```

atgcagcatc accaccatca ccaccacagc acagggtagc agagcgataa ccacacaacg 60
cccatacctc gcggagccca atacagaata cacacgcacg gtgtcttcag aggcattcag 120
gatgtgcgac gtgtgcctgg agtagccccg actcttgtag ggtcggcatc tgagaccagt 180
gagaaacgcc cttcatgtg tgcttaccca ggctgcaata agagatatat taagctgtcc 240
cacttacaga tgcacagcag gaagcacact ggtgagaaac cataccagtg tgacttcaag 300
gactgtgaac gaagggtttt tcgttcagac cagctcaaaa gacaccaaag gagacataca 360
ggtgtgaaac cattccagtg taaaacttgt cagcgaaagt tctcccggtc cgaccacctg 420
aagaccaca ccaggactca tacagggtgaa aagcccttca gctgtcgggtg gccaaagttgt 480
cagaaaaagt ttgcccggtc agatgaatta gtccgccatc acaacatgca tcagagaaac 540
atgaccaaac tccagctggc gctttga 567

```

<210> 332

<211> 342

<212> PRT

<213> Homo sapiens

<400> 332

```

Met Gln His His His His His Met Ser Asp Lys Ile Ile His Leu
                    5              10              15
Thr Asp Asp Ser Phe Asp Thr Asp Val Leu Lys Ala Asp Gly Ala Ile
                20              25              30
Leu Val Asp Phe Trp Ala Glu Trp Cys Gly Pro Cys Lys Met Ile Ala
                35              40              45
Pro Ile Leu Asp Glu Ile Ala Asp Glu Tyr Gln Gly Lys Leu Thr Val
                50              55              60
Ala Lys Leu Asn Ile Asp Gln Asn Pro Gly Thr Ala Pro Lys Tyr Gly
                65              70              75              80
Ile Arg Gly Ile Pro Thr Leu Leu Leu Phe Lys Asn Gly Glu Val Ala
                85              90              95
Ala Thr Lys Val Gly Ala Leu Ser Lys Gly Gln Leu Lys Glu Phe Leu
                100             105             110
Asp Ala Asn Leu Ala Gly Ser Gly Ser Gly His Met Gln His His His
                115             120             125
His His His Val Ser Ile Glu Gly Arg Ala Ser Ser Gly Gly Ser Gly
                130             135             140
Leu Val Pro Arg Gly Ser Ser Gly Ser Gly Asp Asp Asp Lys Ser
                145             150             155             160
Ser Arg His Ser Thr Gly Tyr Glu Ser Asp Asn His Thr Thr Pro Ile
                165             170             175
Leu Cys Gly Ala Gln Tyr Arg Ile His Thr His Gly Val Phe Arg Gly
                180             185             190
Ile Gln Asp Val Arg Arg Val Pro Gly Val Ala Pro Thr Leu Val Arg
                195             200             205

```

```

Ser Ala Ser Glu Thr Ser Glu Lys Arg Pro Phe Met Cys Ala Tyr Pro
 210          215          220
Gly Cys Asn Lys Arg Tyr Phe Lys Leu Ser His Leu Gln Met His Ser
225          230          235          240
Arg Lys His Thr Gly Glu Lys Pro Tyr Gln Cys Asp Phe Lys Asp Cys
          245          250          255
Glu Arg Arg Phe Phe Arg Ser Asp Gln Leu Lys Arg His Gln Arg Arg
          260          265          270
His Thr Gly Val Lys Pro Phe Gln Cys Lys Thr Cys Gln Arg Lys Phe
          275          280          285
Ser Arg Ser Asp His Leu Lys Thr His Thr Arg Thr His Thr Gly Glu
          290          295          300
Lys Pro Phe Ser Cys Arg Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg
305          310          315          320
Ser Asp Glu Leu Val Arg His His Asn Met His Gln Arg Asn Met Thr
          325          330          335
Lys Leu Gln Leu Ala Leu
          340

```

```

<210> 333
<211> 410
<212> PRT
<213> Homo sapiens

```

```

<400> 333
Met Gln His His His His His Met Ser Asp Lys Ile Ile His Leu
          5          10          15
Thr Asp Asp Ser Phe Asp Thr Asp Val Leu Lys Ala Asp Gly Ala Ile
          20          25          30
Leu Val Asp Phe Trp Ala Glu Trp Cys Gly Pro Cys Lys Met Ile Ala
          35          40          45
Pro Ile Leu Asp Glu Ile Ala Asp Glu Tyr Gln Gly Lys Leu Thr Val
          50          55          60
Ala Lys Leu Asn Ile Asp Gln Asn Pro Gly Thr Ala Pro Lys Tyr Gly
          65          70          75          80
Ile Arg Gly Ile Pro Thr Leu Leu Leu Phe Lys Asn Gly Glu Val Ala
          85          90          95
Ala Thr Lys Val Gly Ala Leu Ser Lys Gly Gln Leu Lys Glu Phe Leu
          100          105          110
Asp Ala Asn Leu Ala Gly Ser Gly Ser Gly His Met Gln His His His
          115          120          125
His His His Val Ser Ile Glu Gly Arg Ala Ser Ser Gly Gly Ser Gly
          130          135          140
Leu Val Pro Arg Gly Ser Ser Gly Ser Gly Asp Asp Asp Lys Ser
145          150          155          160
Ser Arg Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val
          165          170          175
Pro Ser Leu Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala
          180          185          190
Ala Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala
          195          200          205
Tyr Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro

```

210		215		220
Pro Pro Pro Pro Pro	His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly			
225	230	235		240
Gly Ala Glu Pro His	Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His			
	245	250		255
Phe Ser Gly Gln Phe	Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro			
	260	265		270
Phe Gly Pro Pro Pro	Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met			
	275	280		285
Phe Pro Asn Ala Pro	Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala			
	290	295		300
Ile Arg Asn Gln Gly	Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser			
305	310	315		320
Tyr Gly His Thr Pro	Ser His His Ala Ala Gln Phe Pro Asn His Ser			
	325	330		335
Phe Lys His Glu Asp	Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln			
	340	345		350
Gln Tyr Ser Val Pro	Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp			
	355	360		365
Ser Cys Thr Gly Ser	Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser			
	370	375		380
Asp Asn Leu Tyr Gln	Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn			
385	390	395		400
Gln Met Asn Leu Gly	Ala Thr Leu Lys Gly			
	405	410		

<210> 334
 <211> 591
 <212> PRT
 <213> Homo sapiens

<400> 334
Met Gln His His His His His His Met Ser Asp Lys Ile Ile His Leu
5 10 15
Thr Asp Asp Ser Phe Asp Thr Asp Val Leu Lys Ala Asp Gly Ala Ile
20 25 30
Leu Val Asp Phe Trp Ala Glu Trp Cys Gly Pro Cys Lys Met Ile Ala
35 40 45
Pro Ile Leu Asp Glu Ile Ala Asp Glu Tyr Gln Gly Lys Leu Thr Val
50 55 60
Ala Lys Leu Asn Ile Asp Gln Asn Pro Gly Thr Ala Pro Lys Tyr Gly
65 70 75 80
Ile Arg Gly Ile Pro Thr Leu Leu Leu Phe Lys Asn Gly Glu Val Ala
85 90 95
Ala Thr Lys Val Gly Ala Leu Ser Lys Gly Gln Leu Lys Glu Phe Leu
100 105 110
Asp Ala Asn Leu Ala Gly Ser Gly Ser Gly His Met Gln His His His
115 120 125
His His His Val Ser Ile Glu Gly Arg Ala Ser Ser Gly Gly Ser Gly
130 135 140
Leu Val Pro Arg Gly Ser Ser Gly Ser Gly Asp Asp Asp Asp Lys Ser
145 150 155 160
Ser Arg Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala

				165					170					175			
Val	Pro	Ser	Leu	Gly	Gly	Gly	Gly	Gly	Cys	Ala	Leu	Pro	Val	Ser	Gly		
			180					185					190				
Ala	Ala	Gln	Trp	Ala	Pro	Val	Leu	Asp	Phe	Ala	Pro	Pro	Gly	Ala	Ser		
		195					200					205					
Ala	Tyr	Gly	Ser	Leu	Gly	Gly	Pro	Ala	Pro	Pro	Pro	Ala	Pro	Pro	Pro		
	210				215						220						
Pro	Pro	Pro	Pro	Pro	Pro	His	Ser	Phe	Ile	Lys	Gln	Glu	Pro	Ser	Trp		
225					230					235					240		
Gly	Gly	Ala	Glu	Pro	His	Glu	Glu	Gln	Cys	Leu	Ser	Ala	Phe	Thr	Val		
			245					250						255			
His	Phe	Ser	Gly	Gln	Phe	Thr	Gly	Thr	Ala	Gly	Ala	Cys	Arg	Tyr	Gly		
		260						265					270				
Pro	Phe	Gly	Pro	Pro	Pro	Pro	Ser	Gln	Ala	Ser	Ser	Gly	Gln	Ala	Arg		
	275						280					285					
Met	Phe	Pro	Asn	Ala	Pro	Tyr	Leu	Pro	Ser	Cys	Leu	Glu	Ser	Gln	Pro		
	290					295					300						
Ala	Ile	Arg	Asn	Gln	Gly	Tyr	Ser	Thr	Val	Thr	Phe	Asp	Gly	Thr	Pro		
305				310						315					320		
Ser	Tyr	Gly	His	Thr	Pro	Ser	His	His	Ala	Ala	Gln	Phe	Pro	Asn	His		
			325					330						335			
Ser	Phe	Lys	His	Glu	Asp	Pro	Met	Gly	Gln	Gln	Gly	Ser	Leu	Gly	Glu		
		340						345					350				
Gln	Gln	Tyr	Ser	Val	Pro	Pro	Pro	Val	Tyr	Gly	Cys	His	Thr	Pro	Thr		
	355					360						365					
Asp	Ser	Cys	Thr	Gly	Ser	Gln	Ala	Leu	Leu	Leu	Arg	Thr	Pro	Tyr	Ser		
	370				375						380						
Ser	Asp	Asn	Leu	Tyr	Gln	Met	Thr	Ser	Gln	Leu	Glu	Cys	Met	Thr	Trp		
385				390						395					400		
Asn	Gln	Met	Asn	Leu	Gly	Ala	Thr	Leu	Lys	Gly	His	Ser	Thr	Gly	Tyr		
			405					410						415			
Glu	Ser	Asp	Asn	His	Thr	Thr	Pro	Ile	Leu	Cys	Gly	Ala	Gln	Tyr	Arg		
		420						425					430				
Ile	His	Thr	His	Gly	Val	Phe	Arg	Gly	Ile	Gln	Asp	Val	Arg	Arg	Val		
	435					440						445					
Pro	Gly	Val	Ala	Pro	Thr	Leu	Val	Arg	Ser	Ala	Ser	Glu	Thr	Ser	Glu		
	450					455					460						
Lys	Arg	Pro	Phe	Met	Cys	Ala	Tyr	Pro	Gly	Cys	Asn	Lys	Arg	Tyr	Phe		
465				470					475					480			
Lys	Leu	Ser	His	Leu	Gln	Met	His	Ser	Arg	Lys	His	Thr	Gly	Glu	Lys		
			485					490					495				
Pro	Tyr	Gln	Cys	Asp	Phe	Lys	Asp	Cys	Glu	Arg	Arg	Phe	Phe	Arg	Ser		
		500						505					510				
Asp	Gln	Leu	Lys	Arg	His	Gln	Arg	Arg	His	Thr	Gly	Val	Lys	Pro	Phe		
	515					520						525					
Gln	Cys	Lys	Thr	Cys	Gln	Arg	Lys	Phe	Ser	Arg	Ser	Asp	His	Leu	Lys		
	530				535						540						
Thr	His	Thr	Arg	Thr	His	Thr	Gly	Glu	Lys	Pro	Phe	Ser	Cys	Arg	Trp		
545				550					555						560		
Pro	Ser	Cys	Gln	Lys	Lys	Phe	Ala	Arg	Ser	Asp	Glu	Leu	Val	Arg	His		
			565					570						575			
His	Asn	Met	His	Gln	Arg	Asn	Met	Thr	Lys	Leu	Gln	Leu	Ala	Leu			
		580						585					590				


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<210> 335
<211> 256
<212> PRT
<213> Homo sapiens
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<400>	335														
Met	Gln	His	His	His	His	His	His	Gly	Ser	Asp	Val	Arg	Asp	Leu	Asn
				5					10					15	
Ala	Leu	Leu	Pro	Ala	Val	Pro	Ser	Leu	Gly	Gly	Gly	Gly	Gly	Cys	Ala
			20					25					30		
Leu	Pro	Val	Ser	Gly	Ala	Ala	Gln	Trp	Ala	Pro	Val	Leu	Asp	Phe	Ala
		35					40					45			
Pro	Pro	Gly	Ala	Ser	Ala	Tyr	Gly	Ser	Leu	Gly	Gly	Pro	Ala	Pro	Pro
	50					55					60				
Pro	Ala	Pro	Pro	Pro	Pro	Pro	Pro	Pro	Pro	Pro	His	Ser	Phe	Ile	Lys
65					70					75					80
Gln	Glu	Pro	Ser	Trp	Gly	Gly	Ala	Glu	Pro	His	Glu	Glu	Gln	Cys	Leu
				85				90					95		
Ser	Ala	Phe	Thr	Val	His	Phe	Ser	Gly	Gln	Phe	Thr	Gly	Thr	Ala	Gly
			100					105					110		
Ala	Cys	Arg	Tyr	Gly	Pro	Phe	Gly	Pro	Pro	Pro	Pro	Ser	Gln	Ala	Ser
		115					120					125			
Ser	Gly	Gln	Ala	Arg	Met	Phe	Pro	Asn	Ala	Pro	Tyr	Leu	Pro	Ser	Cys
	130					135					140				
Leu	Glu	Ser	Gln	Pro	Ala	Ile	Arg	Asn	Gln	Gly	Tyr	Ser	Thr	Val	Thr
145					150					155					160
Phe	Asp	Gly	Thr	Pro	Ser	Tyr	Gly	His	Thr	Pro	Ser	His	His	Ala	Ala
				165					170					175	
Gln	Phe	Pro	Asn	His	Ser	Phe	Lys	His	Glu	Asp	Pro	Met	Gly	Gln	Gln
			180					185					190		
Gly	Ser	Leu	Gly	Glu	Gln	Gln	Tyr	Ser	Val	Pro	Pro	Pro	Val	Tyr	Gly
		195					200					205			
Cys	His	Thr	Pro	Thr	Asp	Ser	Cys	Thr	Gly	Ser	Gln	Ala	Leu	Leu	Leu
	210					215					220				
Arg	Thr	Pro	Tyr	Ser	Ser	Asp	Asn	Leu	Tyr	Gln	Met	Thr	Ser	Gln	Leu
225					230					235					240
Glu	Cys	Met	Thr	Trp	Asn	Gln	Met	Asn	Leu	Gly	Ala	Thr	Leu	Lys	Gly
				245					250					255	

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<210> 336
<211> 188
<212> PRT
<213> Homo sapiens
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<400> 336															
Met	Gln	His	His	His	His	His	His	His	Ser	Thr	Gly	Tyr	Glu	Ser	Asp
				5					10					15	
Asn	His	Thr	Thr	Pro	Ile	Leu	Cys	Gly	Ala	Gln	Tyr	Arg	Ile	His	Thr
			20					25					30		
His	Gly	Val	Phe	Arg	Gly	Ile	Gln	Asp	Val	Arg	Arg	Val	Pro	Gly	Val
		35					40					45			

Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys Arg Pro
 50 55 60
 Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys Leu Ser
 65 70 75 80
 His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro Tyr Gln
 85 90 95
 Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Phe Arg Ser Asp Gln Leu
 100 105 110
 Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln Cys Lys
 115 120 125
 Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr His Thr
 130 135 140
 Arg Thr His Thr Gly Glu Lys Pro Phe Ser Cys Arg Trp Pro Ser Cys
 145 150 155 160
 Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val Arg His His Asn Met
 165 170 175
 His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala Leu
 180 185

<210> 337
 <211> 324
 <212> DNA
 <213> Homo sapiens

<400> 337
 atgcagcatc accaccatca ccacgggttc gacgtgctgg acctgaacgc actgctgccg 60
 gcagttccat ccctgggtgg cgggtggaggc tgcgcactgc cggtttagcgg tgcagcacag 120
 tgggtctccag ttctggactt cgcaccgcct ggtgcatccg catacgggtc cctgggtggt 180
 ccagcacctc cgcccgcac gccccaccg cctccaccgc ccccgcactc cttcatcaaa 240
 caggaacctc gctgggtgg tgcagaaccg cacgaagaac agtgcctgag cgcattctga 300
 gaattctgca gatattccatc acac 324

<210> 338
 <211> 462
 <212> DNA
 <213> Homo sapiens

<400> 338
 atgcagcatc accaccatca ccaccacgaa gaacagtgcc tgagcgcatt caccgttcac 60
 ttctccggcc agttcactgg cacagccgga gcctgtcgct acgggccctt cggtcctcct 120
 ccgcccagcc aggcgtcatc cggccaggcc aggatgtttc ctaacgcgcc ctacctgcc 180
 agctgcctcg agagccagcc cgctattcgc aatcagggtt acagcacggt caccttcgac 240
 gggacgccc a gctacggtca cacgccctcg caccatgcgg cgcagttccc caaccactca 300
 ttcaagcatg aggatcccat gggccagcag ggctcgctgg gtgagcagca gtactcgggtg 360
 ccgcccccg tctatggctg ccacaccccc accgacagct gcaccggcag ccaggctttg 420
 ctgctgagga cgccctacag cagtgaacat ttatactgat ga 462

<210> 339
 <211> 405
 <212> DNA
 <213> Homo sapiens

<400> 339
 atgcagcatc accaccatca ccaccaggct ttgctgctga ggacgcccta cagcagtgac 60

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aatttataacc aaatgacatc ccagcttgaa tgcattgacct ggaatcagat gaacttagga 120
gccaccttaa agggccacag cacagggtac gagagcgata accacacaac gcccattctc 180
tgcggagccc aatacagaat acacacgcac ggtgtcttca gaggcattca ggatgtgcga 240
cgtgtgcctg gagtagcccc gactcttgta cggtcggcat ctgagaccag tgagaaacgc 300
cccttcatgt gtgcttacc aggctgcaat aagagatatt ttaagctgtc ccacttacag 360
atgcacagca ggaagcacac tgggtagaaa ccataccagt gatga 405

```

<210> 340

<211> 339

<212> DNA

<213> Homo sapiens

<400> 340

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atgcagcatc accaccatca ccaccacagc aggaagcaca ctggtgagaa accataccag 60
tgtgacttca aggactgtga acgaagggtt ttctgttcag accagctcaa aagacaccaa 120
aggagacata caggtgtgaa accattccag tgtaaaactt gtcagcgaaa gttctcccgg 180
tccgaccacc tgaagaccca caccaggact catacaggtg aaaagccctt cagctgtcgg 240
tggccaagtt gtcagaaaaa gtttgcccgg tcagatgaat tagtccgcca tcacaacatg 300
catcagagaa acatgaccaa actccagctg gcgctttga 339

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<210> 341

<211> 1110

<212> DNA

<213> Homo sapiens

<400> 341

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atgcagcatc accaccatca ccaccactcc ttcacaaac aggaaccgag ctgggggtgt 60
gcagaaccgc acgaagaaca gtgcctgagc gcattcacgc ttcacttctc cggccagttc 120
actggcacag ccggagcctg tcgctacggg cccttcggtc ctccctccgc cagccaggcg 180
tcattccggc aggccaggat gtttcctaac gcgccctacc tgcccagctg cctcgagagc 240
cagcccgtca ttcgcaatca gggttacagc acggtcacct tcgacgggac gccagctac 300
ggtcacacgc cctcgacca tgccggcgag ttccccaacc actcattcaa gcatgaggat 360
cccatgggccc agcaggggtc gctgggtgag cagcagtaact cgggtgccgc cccggtctat 420
ggctgccaca cccccaccga cagctgcacc ggcagccagg ctttgctgct gaggacgccc 480
tacagcagtg acaatttata ccaaattgaca tcccagcttg aatgcatgac ctggaatcag 540
atgaacttag gagccacctt aaagggccac agcacagggt acgagagcga taaccacaca 600
acgcccattc tctgcggagc ccaatacaga atacacacgc acggtgtctt cagaggcatt 660
caggatgtgc gacgtgtgcc tggagtagcc ccgactcttg tacggtcggc atctgagacc 720
agtgagaaac gcccttcat gtgtgcttac ccaggctgca ataagagata ttttaagctg 780
tcccacttac agatgcacag caggaagcac actggtgaga aaccatacca gtgtgacttc 840
aaggactgtg aacgaagggt ttttcgttca gaccagctca aaagacacca aaggagacat 900
acaggtgtga aaccattcca gtgtaaaact tgtagcgaa agttctcccg gtccgaccac 960
ctgaagaccc acaccaggac tcatacaggt gaaaagccct tcagctgtcg gtggccaagt 1020
tgtcagaaaa agtttgcccg gtcagatgaa ttagtccggc atcacaacat gcatcagaga 1080
aacatgacca aactccagct ggcgctttga 1110

```

<210> 342

<211> 99

<212> PRT

<213> Homo sapiens

<400> 342

```

Met Gln His His His His His His Gly Ser Asp Val Arg Asp Leu Asn
                    5              10              15
Ala Leu Leu Pro Ala Val Pro Ser Leu Gly Gly Gly Gly Gly Cys Ala
                20              25              30
Leu Pro Val Ser Gly Ala Ala Gln Trp Ala Pro Val Leu Asp Phe Ala
                35              40              45
Pro Pro Gly Ala Ser Ala Tyr Gly Ser Leu Gly Gly Pro Ala Pro Pro
                50              55              60
Pro Ala Pro Pro Pro Pro Pro Pro Pro Pro His Ser Phe Ile Lys
                65              70              75              80
Gln Glu Pro Ser Trp Gly Gly Ala Glu Pro His Glu Glu Gln Cys Leu
                    85              90              95
Ser Ala Phe

```

<210> 343

<211> 152

<212> PRT

<213> Homo sapiens

<400> 343

```

Met Gln His His His His His His His Glu Glu Gln Cys Leu Ser Ala
                    5              10              15
Phe Thr Val His Phe Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys
                20              25              30
Arg Tyr Gly Pro Phe Gly Pro Pro Pro Ser Gln Ala Ser Ser Gly
                35              40              45
Gln Ala Arg Met Phe Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu
                50              55              60
Ser Gln Pro Ala Ile Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp
                65              70              75              80
Gly Thr Pro Ser Tyr Gly His Thr Pro Ser His His Ala Ala Gln Phe
                85              90              95
Pro Asn His Ser Phe Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser
                100             105             110
Leu Gly Glu Gln Gln Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His
                115             120             125
Thr Pro Thr Asp Ser Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr
                130             135             140
Pro Tyr Ser Ser Asp Asn Leu Tyr
145              150

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<210> 344

<211> 133

<212> PRT

<213> Homo sapiens

<400> 344

```

Met Gln His His His His His His Gln Ala Leu Leu Leu Arg Thr Pro
                    5              10              15
Tyr Ser Ser Asp Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met
                20              25              30

```

```

Thr Trp Asn Gln Met Asn Leu Gly Ala Thr Leu Lys Gly His Ser Thr
      35              40              45
Gly Tyr Glu Ser Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln
      50              55              60
Tyr Arg Ile His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg
      65              70              75              80
Arg Val Pro Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr
      85              90              95
Ser Glu Lys Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg
      100             105             110
Tyr Phe Lys Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly
      115             120             125
Glu Lys Pro Tyr Gln
      130

```

```

<210> 345
<211> 112
<212> PRT
<213> Homo sapiens

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```

<400> 345
Met Gln His His His His His His His Ser Arg Lys His Thr Gly Glu
      5              10              15
Lys Pro Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Phe Arg
      20              25              30
Ser Asp Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro
      35              40              45
Phe Gln Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu
      50              55              60
Lys Thr His Thr Arg Thr His Thr Gly Glu Lys Pro Phe Ser Cys Arg
      65              70              75              80
Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val Arg
      85              90              95
His His Asn Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala Leu
      100             105             110

```

```

<210> 346
<211> 369
<212> PRT
<213> Homo sapiens

```

```

<400> 346
Met Gln His His His His His His His Ser Phe Ile Lys Gln Glu Pro
      5              10              15
Ser Trp Gly Gly Ala Glu Pro His Glu Gln Cys Leu Ser Ala Phe
      20              25              30
Thr Val His Phe Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg
      35              40              45
Tyr Gly Pro Phe Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln
      50              55              60
Ala Arg Met Phe Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser
      65              70              75              80

```

Gln Pro Ala Ile Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly
 85 90 95
 Thr Pro Ser Tyr Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro
 100 105 110
 Asn His Ser Phe Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu
 115 120 125
 Gly Glu Gln Gln Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr
 130 135 140
 Pro Thr Asp Ser Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro
 145 150 155 160
 Tyr Ser Ser Asp Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met
 165 170 175
 Thr Trp Asn Gln Met Asn Leu Gly Ala Thr Leu Lys Gly His Ser Thr
 180 185 190
 Gly Tyr Glu Ser Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln
 195 200 205
 Tyr Arg Ile His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg
 210 215 220
 Arg Val Pro Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr
 225 230 235 240
 Ser Glu Lys Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg
 245 250 255
 Tyr Phe Lys Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly
 260 265 270
 Glu Lys Pro Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Phe
 275 280 285
 Arg Ser Asp Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys
 290 295 300
 Pro Phe Gln Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His
 305 310 315 320
 Leu Lys Thr His Thr Arg Thr His Thr Gly Glu Lys Pro Phe Ser Cys
 325 330 335
 Arg Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val
 340 345 350
 Arg His His Asn Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala
 355 360 365
 Leu

<210> 347
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 347
 ggctccgacg tgcgggacct g

<210> 348
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 348
 gaattctcaa agcgccagct ggagtttggt 30

<210> 349
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 349
 ggctccgacg tgcgggacct g 21

<210> 350
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 350
 gaattctcaa agcgccagct ggagtttggt 30

<210> 351
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 351
 cacagcacag ggtacgagag c 21

<210> 352
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 352
 gaattctcaa agcgccagct ggagtttggt 30

<210> 353
 <211> 29
 <212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 353

cacgaagaac agtgcctgag cgcattcac

29

<210> 354

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 354

cggcggaatt catcagtata aattgtcact gc

32

<210> 355

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 355

caggctttgc tgctgaggac gccc

24

<210> 356

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 356

cacggagaat tcatcactgg tatggtttct cacc

34

<210> 357

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 357

cacagcagga agcacactgg tgagaaac

28

<210> 358

<211> 30

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer

 <400> 358
 ggatatctgc agaattctca aagcgccagc 30

 <210> 359
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer

 <400> 359
 cactccttca tcaaacagga ac 22

 <210> 360
 <211> 30
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer

 <400> 360
 ggatatctgc agaattctca aagcgccagc 30

 <210> 361
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer

 <400> 361
 ggttccgacg tgcgggacct gaacgcactg ctg 33

 <210> 362
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Primer

 <400> 362
 ctgccggcag cagtgcgttc aggtcccgca cgtcggaacc 40

 <210> 363

<211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 363
 ccggcagttc catccctggg tggcgggtgga ggctg 35

<210> 364
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 364
 cggcagtgcg cagcctccac cgccaccag ggatggaa 38

<210> 365
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 365
 cgcactgccg gttagcgggtg cagcacagtg ggctc 35

<210> 366
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 366
 cagaactgga gccactgtg ctgcaccgct aac 33

<210> 367
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 367
 cagttctgga cttcgaccg cctgggtgcat ccgcatac 38

<210> 368
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 368
 caggggaaccg tatgcggatg caccaggcgg tgcgaagtc 39

<210> 369
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 369
 ggttccctgg gtggtccagc acctccgccc gcaacgcc 38

<210> 370
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 370
 ggcggtgggg gcgttgctgg cgaggtgct ggaccacc 38

<210> 371
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 371
 cccaccgcct ccaccgccc cgactcctt catcaaacag 40

<210> 372
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 372
 ctaggttcct gtttgatgaa ggagtgcggg ggcggtgga 39

<210> 373
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 373
 gaacctagct ggggtggtgc agaaccgcac gaagaaca 38

<210> 374
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 374
 ctcaggcact gttcttcgtg cggttctgca ccaccccag 39

<210> 375
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 375
 gtgcctgagc gcattctgag aattctgcag at 32

<210> 376
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 376
 gtgtgatgga tatctgcaga attctcagaa tgcg 34